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WIND DIRECTIONS IN THE POLISH TATRAS,(U)
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by

J. Lewinska

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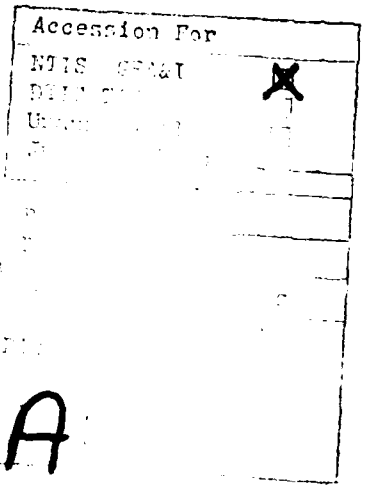

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WIND DIRECTIONS IN THE POLISH TATRAS[1]

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The study of anemometric conditions in the Tatra Mountains with the usually available observation data presents a rather difficult problem for two basic reasons:

1) observations are carried out using the Wild wind meter, which is not a very precise instrument, as W. Midowicz has already noted [5]. It must be stated that determining wind direction even with imprecise instruments or in the wintertime with the lack of light using visual wind meters gives more reliable results and raises fewer doubts than defining wind speed;

2) the data collected up to present time and used for the processing are not uniform, because they come from different times and different series of observations.

For the present processing, observation results are used which were produced at the stations mentioned in Table 1.

[1] A summary of the paper presented at the Climatological Conference held in Krakow on June 24-25, 1955.

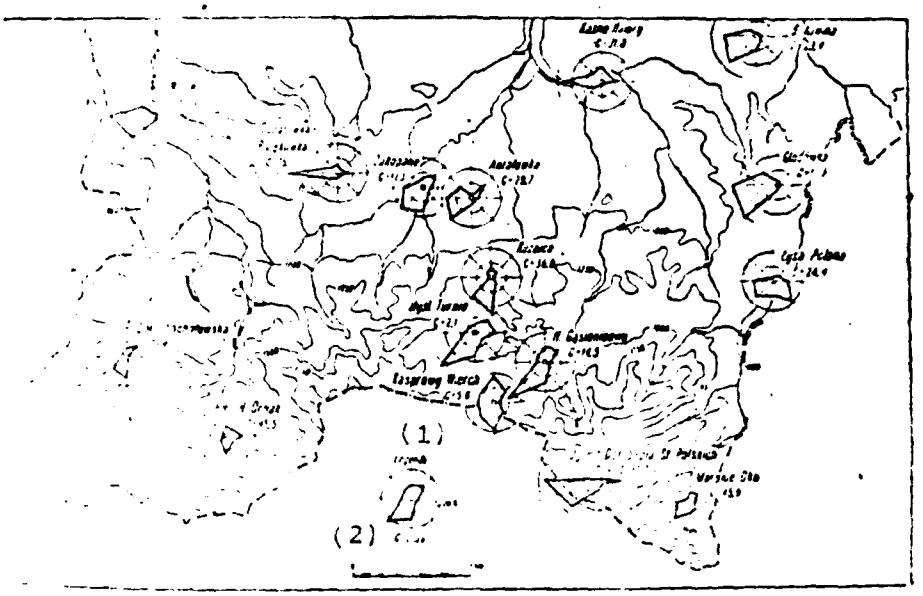

Fig. 1. Frequency of occurrence for individual wind directions in the Tatras (%)-year.
Key: (1) Legend; (2) C = calm.

Table 1. List of stations which results are used for working out the development of wind directions in the Polish Tatras.

(1) Lp.	(2) Nazwa stacji	(3) Okres obserwacji	(4) Ilość lat
1	Antolówka	1952 – 1953	2
2	Bukowina Tatrzańska	1949 – 1953	5
3	Dolina Chochołowska	1951 – 1953	3
4	Dol. 5 Stawów Polskich	1950 – 1953	4
5	Głodówka	1951 – 1953	3
6	Gubałówka-Pajękówka	1927 – 1936	10
7	Hala Gąsienicowa	1927 – 1945	19
8	Hala Ornak	1950 – 1953	4
9	Kasprowy Wierch	1938 – 1951,	14
10	Kuźnice	1950 – 1953	4
11	Łysa Polana	1951 – 1953	3
12	Morskie Oko	1927 – 1953	19
13	Myślenickie Turnie	1949 – 1953	5
14	Poronin	1927 – 1953	19
15	Witów	1951 – 1953	3
16	Zakopane	1921 – 1939	
		1943 – 1944	21

Table 2. Frequency of occurrence of individual wind directions in the Tatras (%) - year.

(1) Nr	(2) [illegible]	(3) Okres obserw.	(4) Liczba lat obserw.	(5) Kierunki wiatrów N	NE	E	SE	S	SW	W	NW	(6) Cisza
1	Antoniówka	52—53	2	1,5	11,9	4,5	1,9	4,3	19,2	16,3	19,7	29,7
2	Bukowina Tatrzańska .	49—53	5	1,7	1,4	2,2	3,7	9,8	25,3	21,4	5,1	29,4
3	Dolina Chochołowska . .	51—53	3	6,2	10,0	1,4	1,9	14,9	12,4	4,4	2,4	47,3
4	Dolina 7 Stawów Polskich	50—53	4	0,8	0,6	14,3	2,0	5,3	25,0	37,5	0,9	13,7
5	Głodówka	51—53	3	2,5	2,4	0,5	0,8	2,9	30,6	30,3	12,6	17,6
6	Gubałówka-Pajękówka .	27—36	10	6,2	2,3	7,4	0,4	3,3	5,6	34,0	5,3	35,5
7	Hala Gąsienicowa . . .	27—53	19	10,1	11,4	3,2	2,5	12,3	33,7	6,1	7,2	13,5
8	Hala Ornak	50—53	4	7,3	6,8	11,3	6,2	13,9	4,7	1,9	2,4	45,5
9	Kasprowy Wierch . . .	28—51	14	1,9	10,5	3,2	1,7	19,7	13,2	11,1	10,1	5,6
10	Kuźnice	50—53	4	7,1	5,3	1,1	2,4	5,3	18,2	1,5	3,3	36,6
11	Łysa Polana	51—53	3	2,3	5,3	10,4	17,7	9,9	15,0	12,3	2,2	24,4
12	Morskie Oko	27—53	19	6,9	7,3	2,5	4,7	6,8	11,4	8,7	2,8	45,9
13	Myślenickie Turnie . .	49—53	5	6,3	11,9	14,2	6,0	16,0	32,3	6,0	5,2	2,1
14	Poronin	27—53	19	10,4	15,6	9,3	1,7	1,9	5,8	26,2	7,3	31,8
15	Witów	51—53	3	1,6	2,2	0,9	2,2	3,1	20,0	29,0	10,0	31,0
16	Zakopane	21—39 i 43—44	21	6,8	11,9	5,5	4,8	16,2	21,3	12,2	4,8	17,3

Key: (1) number; (2) Station name; (3) Observation period; (4) Number of years.

Key: (1) No.; (2) Location; (3) Observation period; (4) Number of years observed; (5) Wind direction; (6) Calm.

From the list, it is seen that the shortest series of observations took scarcely 2 years or 2004 observations, and the longest 21 years, or 21,732 observations. For 14 of the stations mentioned above, the frequency of wind direction was calculated in percentages for months, seasons, and years. The statistical data for Kasprowy Wierch was borrowed from the work of M. Orlicz [10], and for Zakopane, from the handbook by Guminski. The results worked out for the year are presented in Table 2 and Fig. 1.

Analysis of the anemometric conditions in the Polish Tatras and at Podhale, on the basis of the observational data so far has only permitted a general picture of this factor to be represented:

1) the predominant winds are winds with directions consistent with the trend of the valleys, troughs, and passes, and thus they have a SW and S direction. The next most dominant direction is W, occurring at Dolina Piec Stawow Polskich, Poronin, and Gubalowka-Pajekowka;

2) the dynamic profile of Kasprowy Wierch is pronounced only at Kuznice; however, winds are frequently observed here from the opposite direction than at Kasprowy Wierch. The high frequency of winds from the N direction is probably caused by the height of the observatory's position above sea level and the free influx of air currents from this sector;

3) let us note the very small participation of winds from the N quadrant, especially at stations located in the sub-Tatra Trough and in the lower parts of the Tatras, in which the sheltering role of the Spisko-Gubalowski plateau is accentuated;

4) little change is observed in the frequency of wind direction from place to place, as well as little seasonal variability;

5) the effect of the general baric circulation, which yields winds with a NW direction, according to Sokolowski [11], is not evident in the tables or on the map attached to the present publication.

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